

WHAT IS CLAIMED IS:

1. A method of assembling a tubular system,
the tubular system comprising a tubular; a liner in the tubular, the liner having an outer wall engaging an inner wall of the tubular, the liner having an inner wall defining a hollow bore; and at least one elongated member which is disposed between said liner and said tubular and defines a fluid flow passage between said liner and said tubular;
said method comprising the steps of:
placing said liner and said member in contact with each other;
while said liner and said member are in contact, pulling on said elongated member in order to pull said liner and said elongated member together into said tubular.
2. The method of claim 1, wherein after said pulling step, said member is disposed between said outer liner surface and said tubular and thereby deforms said liner so as to define said fluid flow passage.
3. The method of claim 1, wherein said member is disposed in a channel which is formed in a surface of said liner.
4. The method of claim 1, further comprising the steps of:
placing a predetermined initial stress on said liner so as to induce a strain; and then
adhering said liner and said member to each other;
wherein in said pulling step, said liner is pulled along with said member into said tubular without inducing substantial additional strain on said liner.
5. The method of claim 4, wherein said adhering step comprises the step of providing barbs on said member.
6. The method of claim 4, wherein said adhering step comprises the step of applying heat to said member.
7. The method of claim 6, wherein said adhering step further comprises the step of applying an adhesive between said member and said liner.

8. The method of claim 6, wherein said heat is applied by passing an electric current through said member.

9. The method of claim 6, wherein said heat is applied by radiation from the exterior of said liner.

10. The method of claim 4, wherein said adhering step comprises the step of applying an adhesive between said member and said liner.

11. The method of claim 4,
wherein said member is disposed in a channel which is formed in said outer surface of said liner, and
wherein said adhering step comprises the steps of disposing said member in said channel, then radially compressing the liner so that said channel grips said member.

12. The method of claim 11, wherein said member comprises a cable.

13. The method of claim 11, wherein said member comprises a generally helical spring.

14. The method of claim 13, wherein said spring has a spring constant which is stiffer than a modulus of elasticity of said liner so that said liner is pulled by said member into said tubular without placing substantial additional strain on said liner.

15. The method of claim 11, wherein said member when in said channel is disposed fully inside said outer surface of said liner.

16. The method of claim 15, wherein said member is adhered to said liner sufficiently to remain in said channel.

17. The method of claim 11, wherein said member is adhered to said liner sufficiently to remain in said channel.

18. The method of claim 11, further comprising the step of making said member of a sufficiently strong material to resist deformation of said channel due to increased pressure in said liner bore.

19. The method of claim 11, further comprising the step of making said member of a sufficiently strong material to resist deformation of said channel due to thermal softening of said liner.

20. The method of claim 11, further comprising the step of making said member of a sufficiently strong material to resist deformation of said channel due to swelling of said liner upon contact with materials in said liner bore.

21. A tubular system with internal heating, comprising:
a host tubular;
a liner in the tubular, the liner having an outer wall engaging an inner wall of the tubular, the liner having an inner wall defining a hollow bore; and
at least one electrically conductive elongated member disposed between said host tubular and said liner;
said liner comprising an electrical heating element connected to said at least one member for receiving electrical current from said member and thereby heating said tubular system;
wherein said tubular system is assembled by the steps of:
securing said liner and at least one elongated member to each other; and
then pulling on said member, so that said liner is pulled, along with said member, into said tubular.

22. The tubular system of claim 21, the liner having at least one channel formed therein, said member being disposed in said at least one channel.

23. The tubular system of claim 22, wherein said electrical heating element is a conductive polymer layer which has an electrical resistance and forms a part of said liner.

24. The tubular system of claim 22, wherein said electrical heating element is an electrically resistive wire disposed in said at least one channel.

25. The tubular system of claim 21, wherein said tubular system is further assembled by the steps of:

placing a predetermined initial stress on said liner so as to induce a strain; and

then pulling on said member, so that said liner is pulled, along with said member, into said tubular without inducing substantial additional strain on said liner.

26. A tubular system with internal heating, comprising:

a host tubular;

a liner in the tubular, the liner having an outer wall engaging an inner wall of the tubular, the liner having an inner wall defining a hollow bore; and

at least one electrically conductive elongated member disposed between said host tubular and said liner;

said liner comprising an electrical heating element connected to said at least one member for receiving electrical current from said member and thereby heating said tubular system;

wherein said member is adhered to said liner and has sufficient tensile strength to be usable to pull said liner into said tubular without inducing substantial strain in said liner.

27. A tubular system adapted for determining the location of a blockage therein, the tubular system comprising:

a tubular;

a liner in the tubular, the liner having at least one channel formed therein; an outer wall of the liner engaging an inner wall of the tubular; the liner having an inner wall defining a hollow bore; and

at least one elongated sensing member which is disposed in said at least one channel and is responsive to pressure in said hollow bore within said liner, and produces a pressure

signal which is indicative of said location of said blockage.

28. The tubular system of claim 27, wherein said elongated sensing member comprises an electrical strain gauge.

29. The tubular system of claim 27, wherein said elongated sensing member comprises at least one optical fiber.

30. The tubular system of claim 27, wherein said member is adhered to said liner and has sufficient tensile strength to be usable to pull said liner into said tubular without inducing substantial strain in said liner.

31. A method of determining the location of a blockage in a tubular system, the tubular system comprising:

a tubular; and

a liner in the tubular, the liner having at least one channel formed therein; an outer wall of the liner engaging an inner wall of the tubular; the liner having an inner wall defining a hollow bore; said method comprising the steps of:

placing at least one elongated sensing member in said at least one channel, said sensing member being responsive to pressure in said hollow bore within said liner, said pressure being indicative of said location of said blockage;

applying an input signal to said sensing member; and

receiving an output signal from said sensing member and processing said output signal to determine said location of said location of said blockage.

32. The method of claim 31, wherein said sensing member comprises an electrical strain gauge and said input and output signals are electrical.

33. The method of claim 31, wherein said sensing member comprises at least one optical fiber and said input and output signals are optical.

34. The method of claim 31, wherein said tubular system is assembled by the steps

of:

placing a predetermined initial stress on said liner so as to induce a strain;
then adhering said liner to at least one elongated member; and
then pulling on said member, so that said liner is pulled, along with said member, into said tubular without inducing substantial additional strain on said liner.

35. A method of assembling a tubular system,
the tubular system comprising a tubular; a liner in the tubular, the liner having an outer wall engaging an inner wall of the tubular, the liner having an inner wall defining a hollow bore; and at least one elongated member which is disposed between said liner and said tubular and defines a fluid flow passage between said liner and said tubular;
said method comprising the steps of:
placing said liner and said member in contact with each other;
while said liner and said member remain in contact, pulling on said elongated member in order to pull said liner and said member together into said tubular.

36. The method of claim 35, wherein said contact between said elongated member and said liner protects said elongated member from deformation while being pulled into said tubular.

37. The method of claim 36, wherein said elongated member comprises a communications cable.

38. The method of claim 36, wherein said elongated member comprises a heating cable.

39. The method of claim 36, wherein said elongated member comprises a force-sensing cable.

40. The method of claim 36, wherein said elongated member comprises an electrical or fluid-carrying conduit.

41. A method of assembling a tubular system,
the tubular system comprising a tubular; a liner in the tubular, the liner having an outer wall engaging an inner wall of the tubular, the liner having an inner wall defining a hollow bore; and at least one elongated member which is disposed between said liner and said tubular and defines a fluid flow passage between said liner and said tubular;

said method comprising the steps of:

placing said liner and said member in contact with each other;

while said liner and said member remain in contact, pulling said liner into said tubular;

wherein said contact between said elongated member and said liner protects said elongated member from deformation while being pulled into said tubular;

wherein said member is disposed in a channel which is formed in said outer surface of said liner, and

wherein said adhering step comprises the steps of disposing said member in said channel, then compressing said channel so that said channel grips said elongated member.

42. The method of claim 41, wherein said member and liner are pulled into said tubular with said channel still compressed.

43. The method of claim 41, wherein said channel is compressed by radially compressing said liner.

44. The method of claim 43, wherein said member and said liner are pulled into said tubular with said liner still compressed.

45. The method of claim 11, wherein said member and said liner are pulled into said tubular with said liner still compressed.